



ATTN: MAIL STOP AF  
PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re the Application of:

Sim, Gee-Kee  
Yang, Shumin  
Sellins, Karen S.

Patent No.: 7,053,181 B2

Issued: May 30, 2006

Serial No.: 10/790,396

Filed: March 1, 2004

Atty. File No.: IM-1-C1-PUS-1

For: "CANINE B7-2 PROTEINS,  
COMPOSITIONS AND USES  
THEREOF"

) Group Art Unit: 1644  
)  
)

) Examiner: Ouspenski, Ilia I  
)  
)

) REQUEST FOR  
) CERTIFICATE OF CORRECTION  
)

CERTIFICATE OF MAILING

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P.O. BOX 1450, ALEXANDRIA, VA 22313-1450, THIS  
21 DAY OF NOVEMBER 2007.

HESKA CORPORATION

By: Susan Gordon

Susan Gordon

Commissioner for Patents  
ATTN: Certificate of Correction Branch  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

This is a request for a Certificate of Correction to the instant issued patent. Please correct the title on the patent cover page as shown below.

Page one, item (54), please remove "AND FELINE" from the title.

Support for this correction can be found in Applicants' Amendment and Response, filed January 13, 2005; and acknowledged by the Examiner in the Final Office Action, dated April 1, 2005 (see copies attached).

Respectfully submitted,

Dated: November 20, 2007

By: Richard J. Stern

Richard J. Stern, Ph.D.

Registration No. 50,668

Heska Corporation

3760 Rocky Mountain Avenue

Loveland, Colorado 80538

Telephone: (970) 493-7272, ext. 4174

Facsimile: (970) 619-3011

**Certificate**

NOV 28 2007

**of Correction**

NOV 30 2007

# UNITED STATES PATENT AND TRADEMARK OFFICE

## CERTIFICATE OF CORRECTION

PATENT NO. : 7,053,181

DATED : May 30, 2006

INVENTOR(S) : Shumin Yang and Gek-Kee Sim

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

One page one, item (54) please remove "AND FELINE" from the title.

MAILING ADDRESS OF SENDER (Please do not use customer number

Heska Corporation  
Intellectual Property Dept.  
3760 Rocky Mountain Ave.  
Loveland, CO 80538

PATENT NO. 7,053,181

No. of additional copies



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ATTN: MAIL STOP AMENDMENT  
PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

Sim, Gee-Kee  
Yang, Shumin  
Sellins, Karen S.

Serial No.: 10/790,396

Filed: March 1, 2004

Atty. File No.: IM-1-C1-PUS-1

For: "CANINE B7-2 PROTEINS,  
COMPOSITIONS AND USES  
THEREOF (as amended)"

Group Art Unit: 1644

Examiner: Ouspenski, Ilia I

AMENDMENT AND RESPONSE

COPY

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1450, THIS 13TH DAY OF JANUARY 2005.

HESKA CORPORATION

By:

*Susan A. Gordon*

Susan A. Gordon

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the Restriction Requirement mailed from the U.S. Patent and Trademark Office on September 13, 2004, Applicants submit the following amendments and arguments. A Petition for a one-month Extension of Time is attached.

DOCKETED

30 2007

Amendments to the Specification

Please cancel the title on page 1 of the specification and replace it with the following title: "CANINE B7-2 PROTEINS, COMPOSITIONS AND USES THEREOF"

On page 1, following the title of the invention, please replace the previously submitted "CROSS-REFERENCE TO RELATED APPLICATIONS" paragraph with the following paragraph:

--CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a Divisional of pending prior National Phase Filing U.S. Patent Application Serial No. 09/646,561, filed September 19, 2000, entitled "Canine and Feline B7-2 Nucleic Acid Molecules and Uses Thereof"; which claims priority to international PCT Application No. PCT/US99/06187, filed March 19, 1999, entitled "Novel Forms of T Cell Costimulatory Proteins, Nucleic Acid Molecules, and Uses Thereof"; which is a continuation-in-part of U.S. Application Serial No. 09/062,597, filed April 17, 1998, entitled "Novel Forms of T Cell Costimulatory Proteins, Nucleic Acid Molecules, and Uses Thereof"; which claims priority to U.S. Provisional Application Serial No. 60/078,765, filed March 19, 1998, entitled "Novel Forms of T Cell Costimulatory Proteins, Nucleic Acid Molecules, and Uses Thereof".--

On page 18 of the specification, please replace the paragraph spanning lines 1-16 with the following paragraph:

Furthermore, it is known in the art that there are commercially available computer programs for determining the degree of similarity between two nucleic acid sequences. These computer programs include various known methods to determine the percentage identity and the number and length of gaps between hybrid nucleic acid molecules. Preferred methods to determine the percent identity among amino acid sequences and also among nucleic acid sequences include analysis using one or more of the commercially available computer programs designed to compare and analyze nucleic acid or amino acid sequences. These computer programs include, but are not limited to, the Wisconsin Package Version 9.0 sequence analysis software, available from Genetics Computer Group (GCG), Madison, WI; DNASIS®

NOV 30 2007



UNITED STATES

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'05 APR 5 RCV'D

UNITED STATES DEPARTMENT OF COMMERCE  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,396	03/01/2004	Shumin Yang	IM-1-C1-PUS-1	3337
26949	7590	04/01/2005		
HESKA CORPORATION INTELLECTUAL PROPERTY DEPT. 1613 PROSPECT PARKWAY FORT COLLINS, CO 80525				
EXAMINER OUSPENSKI, ILIA I				
ART UNIT 1644				
PAPER NUMBER				

DATE MAILED: 04/01/2005

DOCKETED

Please find below and/or attached an Office communication concerning this application or proceeding.

Final OA  
2 mo response due 6-1-05  
3 mo response due 7-1-05  
w/ exts to 10-1-05

RTS/CTV

NOV 30 2007



## Office Action Summary

Application No.

10/790,396

Applicant(s)

YANG ET AL.

Examiner

ILIA OUSPENSKI

Art Unit

1644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 65-80 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 65-80 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

'05 APR 5 RCV'D

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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*HL*

### DETAILED ACTION

1. Applicant's amendment, filed 01/18/2005, is acknowledged.

Claims 1 – 64 have been cancelled.

Claims 65 – 80 have been added.

*Claims 65 – 80 are pending.*

2. This Office Action will be in response to applicant's arguments, filed 01/18/2005.

The rejections of record can be found in the previous Office Action, mailed 09/13/2004.

It is noted that new grounds of rejection are set forth herein.

3. The objection of record to priority claim under 35 USC 119(e) has been withdrawn in view of Applicant's arguments.

4. Applicant's correction of the filing date of priority application 09/646,561 is acknowledged.

Applicant is again reminded to update the status of priority application 09/062,597 (Abandoned).

5. Applicant's statement regarding the absence of co-inventor Sim's signature from Oath or Declaration is acknowledged.

30 2007,

Applicant states that copies of a petition under 37 CFR 1.47(a) filed in the parent application USSN 09/646,561 and of the USPTO decision accepting the parent application without the signature of co-inventor Gek-Kee Sim, as well as a copy of a



US007053181B2

IM-1-C1-PUS-1

**(12) United States Patent**  
**Yang et al.****(10) Patent No.: US 7,053,181 B2****(45) Date of Patent: May 30, 2006****(54) CANINE AND FELINE B7-2 PROTEINS, COMPOSITIONS AND USES THEREOF****(75) Inventors:** Shumin Yang, Palo Alto, CA (US);  
Gek-Kee Sim, Denver, CO (US)**(73) Assignee:** Heska Corporation, Loveland, CO (US)**(\*) Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.**(21) Appl. No.:** 10/790,396**(22) Filed:** Mar. 1, 2004  
(Under 37 CFR 1.47)**(65) Prior Publication Data**  
US 2004/0157296 A1 Aug. 12, 2004**Related U.S. Application Data****(60)** Division of application No. 09/646,561, filed as application No. PCT/US99/06187 on Mar. 19, 1999, now Pat. No. 6,852,847, which is a continuation-in-part of application No. 09/062,597, filed on Apr. 17, 1998, now abandoned.**(60)** Provisional application No. 60/078,765, filed on Mar. 19, 1998.**(51) Int. Cl.**  
**C07K 14/46** (2006.01)  
**C07K 14/725** (2006.01)  
**C12P 21/02** (2006.01)**(52) U.S. Cl.** 530/350; 530/351; 514/8; 514/12; 514/21**(58) Field of Classification Search** 530/350, 530/351; 514/8  
See application file for complete search history.**(56) References Cited****U.S. PATENT DOCUMENTS**5,580,756 A 12/1996 Linsley et al. 435/69.7  
6,084,067 A \* 7/2000 Freeman et al. 530/350**FOREIGN PATENT DOCUMENTS**WO WO 95/03408 2/1995  
WO WO 95/06738 3/1995  
WO WO 95/23859 9/1995**OTHER PUBLICATIONS**Maher et al. J. Immunol., 1996, vol. 157(9), pp. 3838-3844.\*  
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Isono, T., Genbank Accession No. 755097, 1995.

(Continued)

Primary Examiner—Phillip Gambel

Assistant Examiner—Ilia Ouspenski

(74) Attorney, Agent, or Firm—Heska Corporation

**(57) ABSTRACT**

The present invention relates to B7 proteins; to B7 nucleic acid molecules, including those that encode such B7 proteins; to antibodies raised against such B7 proteins; and to therapeutic compounds that regulate B7 function. The present invention also includes methods to identify and obtain such proteins, nucleic acid molecules, antibodies, and inhibitory compounds. Also included in the present invention are therapeutic compositions comprising such proteins, nucleic acid molecules, antibodies and/or inhibitory compounds as well as the use of such therapeutic compositions to regulate an immune response in an animal.

**10 Claims, No Drawings**

NOV 30 2006



-continued

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 <213> ORGANISM: Artificial Sequence  
 <220> FEATURE:  
 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic  
 Primer

<400> SEQUENCE: 64

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28

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 <211> LENGTH: 35  
 <212> TYPE: DNA  
 <213> ORGANISM: Artificial Sequence  
 <220> FEATURE:  
 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic  
 Primer

<400> SEQUENCE: 65

cccctaggtt aaaactgtgt agtactgttg tcgcc

35

What is claimed is:

1. An isolated protein encoded by a nucleic acid molecule comprising a nucleic acid sequence at least about 95% identical to a nucleic acid sequence selected from SEQ ID NO:9 or SEQ ID NO:19, wherein said protein is capable of binding a CTLA4 or CD28 protein or is capable of co-stimulating T-cells.
2. The isolated protein of claim 1, wherein said protein is encoded by a nucleic acid molecule comprising a nucleic acid sequenced selected from SEQ ID NO:9 or SEQ ID NO:19.
3. The isolated protein of claim 1, wherein said protein is encoded by a nucleic acid molecule consisting of SEQ ID NO:9 or SEQ ID NO:19.
4. A therapeutic composition comprising the isolated protein of claim 1, wherein said composition, when administered to a canid, regulates T-cell mediated immune responses in said canid.
5. The therapeutic composition of claim 4, wherein said composition comprises a component selected from an excipient, an adjuvant or a carrier.

25

6. An isolated protein comprising an amino acid sequence at least about 95% identical to an amino acid sequence selected from SEQ ID NO:7 or SEQ ID NO:17, wherein said isolated protein is capable of binding a CTLA4 or CD28 protein or is capable of co-stimulating T-cells.

7. The isolated protein of claim 6, wherein said protein comprises an amino acid sequence selected from SEQ ID NO:7 or SEQ ID NO:17.

8. The isolated protein of claim 6, wherein said protein consists of an amino acid sequence selected from SEQ ID NO:7 or SEQ ID NO:17.

9. A therapeutic composition comprising the isolated protein of claim 6, wherein said composition, when administered to a canid, regulates T-cell mediated immune responses in said canid.

10. The therapeutic composition of claim 9, wherein said composition comprises a component selected from an excipient, an adjuvant or a carrier.

\* \* \* \* \*

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